



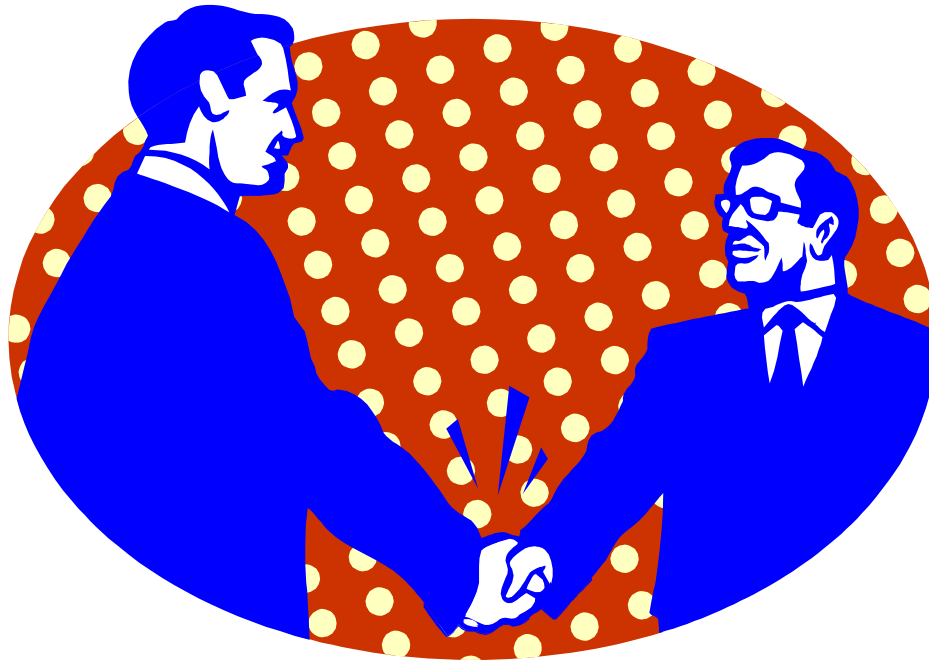
Manchester Urban Ponds Restoration Program

“Improving the health of Manchester's ponds
with the power of partnership and the spirit of
community”

Overview

- Program Background & Goals
- A Few Definitions
- A Virtual Field Trip to Manchester's Urban Ponds & Pond Projects
- Data Collection & Analysis
- Water Quality Sampling Equipment
- Outreach & Education Endeavors

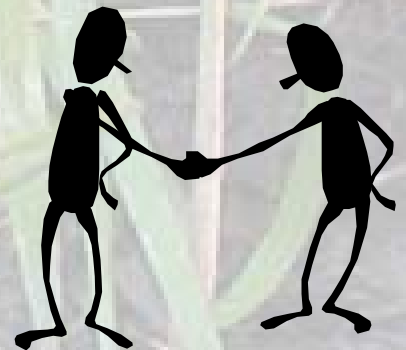
1) Program Background & Goals



What Is The Manchester Urban Ponds Restoration Program?

Part of the **Supplemental Environmental Projects Plan (SEPP)** which is an agreement between the city of Manchester, NH Department of Environmental Services, and the US Environmental Protection Agency to correct the sewer/stormwater overflow problem.

7 ponds in Manchester are being **evaluated** and **monitored** for restoration potential.



What Are the **Goals** of the Manchester Urban Ponds Restoration Program?

1. **Return the ponds to their historical uses:**

(Such as boating, fishing, swimming.)

2. **Promote public awareness, education, and stewardship:**

(Through watershed meetings, cleanups, newsletters, "Ponds Day" and other educational events.)

3. **Reduce pollutant load/nutrient inputs to improve water quality.**

4. **Maintain or enhance biological diversity.**

5. **Provide better recreational uses at the ponds**

What Are The Other **SEPP** Programs In Manchester?

1. Streambank Restoration

(Merrimack River, Piscataquog River, Great and Little Cohas Brook, and other tributaries)

2. Land Preservation

(Hackett Hill Atlantic White Cedar and Black Gum Communities)

3. Health Risk Reduction for Children

(Lead abatement and asthma reduction)

4. Stormwater Management

(CSO Separation and NPDES Phase II Planning)

5. 8th Grade Environmental Education Curriculum Development

Project Partners

EPA New England

NH Department of
Environmental Services

NH Fish & Game Dept.

Manchester Planning Dept.

Manchester Highway Dept.

Manchester Health Dept..

Manchester Parks & Rec.
Dept.

Hillsborough County
Cons. District

Camp, Dresser & McKee

Malcolm-Pirnie

Amoskeag Fishways

Audubon Society of NH

Merrimack River
Watershed Council

2) A Few Definitions



What Is A Watershed?

Watershed: Land draining to a particular waterbody; often described as a funnel, where the lake is the bottom of the basin, collecting all the water that falls inside the funnel.

Watershed Management: Implementing practices within a watershed designed to protect or restore the water quality of the receiving waterbody. Such practices may include the implementation of **best management practices (BMPs)**.



"Point" & "Non-Point" Source Pollution?



Point Source Pollution: Pollution often resulting from discharges into water from identifiable sources (points), such as industrial waste or municipal sewers.

Non-Point Source Pollution: Pollution originating from a diffuse area (not a single point) in the watershed, often entering the water body via surface runoff or groundwater.

Eutrophication

Cultural Eutrophication: When human activities lead to the premature aging of a lake or pond.



Exotic/Invasive Species

Plant or animal species introduced to an area from another country or state that are not native to that area.

Common "Aquatic" Exotics & Their Locations:

- Milfoil (Lake Massabesic), Brazilian Waterweed (Nutts Pond), Common Reed (Crystal Lake, McQuesten Pond, Stevens Pond)

Common "Terrestrial" Exotics:

- Autumn Olive, Bittersweet, Buckthorn, Japanese Knotweed

Nutrients

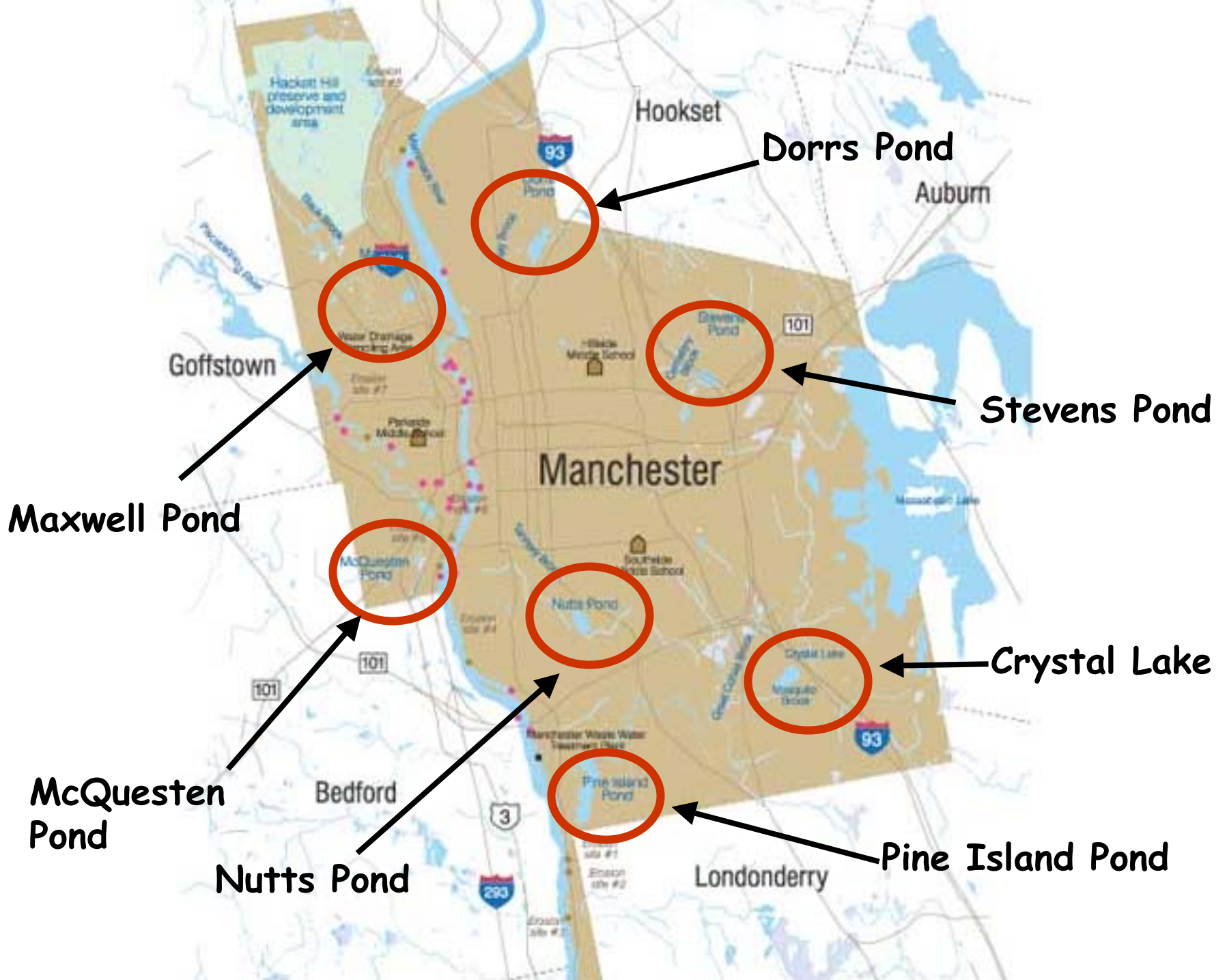
Inorganic substances required by plants to manufacture food by photosynthesis.

Phosphorus is the nutrient that usually limits the amount of aquatic plant growth in NH lakes and ponds.



3) A Virtual Field Trip to Manchester's Urban Ponds





Crystal Lake



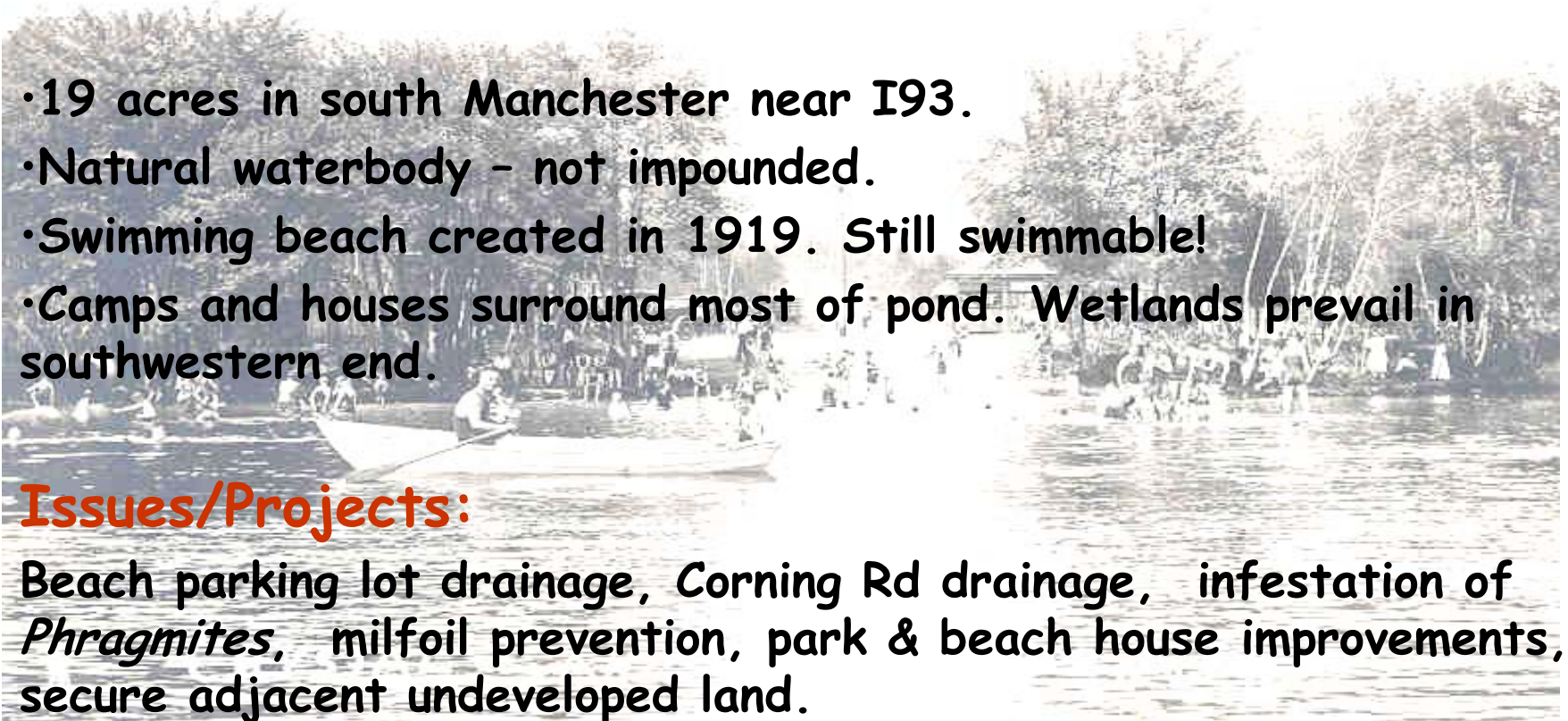
Crystal Lake

Goal(s): To maintain swimmable/fishable water quality standards.

- 19 acres in south Manchester near I93.
- Natural waterbody - not impounded.
- Swimming beach created in 1919. Still swimmable!
- Camps and houses surround most of pond. Wetlands prevail in southwestern end.

Issues/Projects:

Beach parking lot drainage, Corning Rd drainage, infestation of *Phragmites*, milfoil prevention, park & beach house improvements, secure adjacent undeveloped land.



Dorrs Pond





Dorrs Pond

Goal(s): To restore fishable/swimmable water quality standards.

- North end of Manchester at Livingston Park.
- 150 acres of woodland to the west of the pond.
- Created by an impoundment of Ray Brook in 1862.
- Ice harvesting began in 1863.
- Deeded to the City in 1923 for conversion to swimming hole.
- Dam reconstructed, bath house built, and sand created beach.
- After 1936 use as swimming hole declined - Livingston Park pool built.

Issues/Projects:

Tributary runoff from adjacent areas, increased nutrient loading, Parks & Recreation trail & park improvement project, secure adjacent undeveloped land.

Maxwell Pond



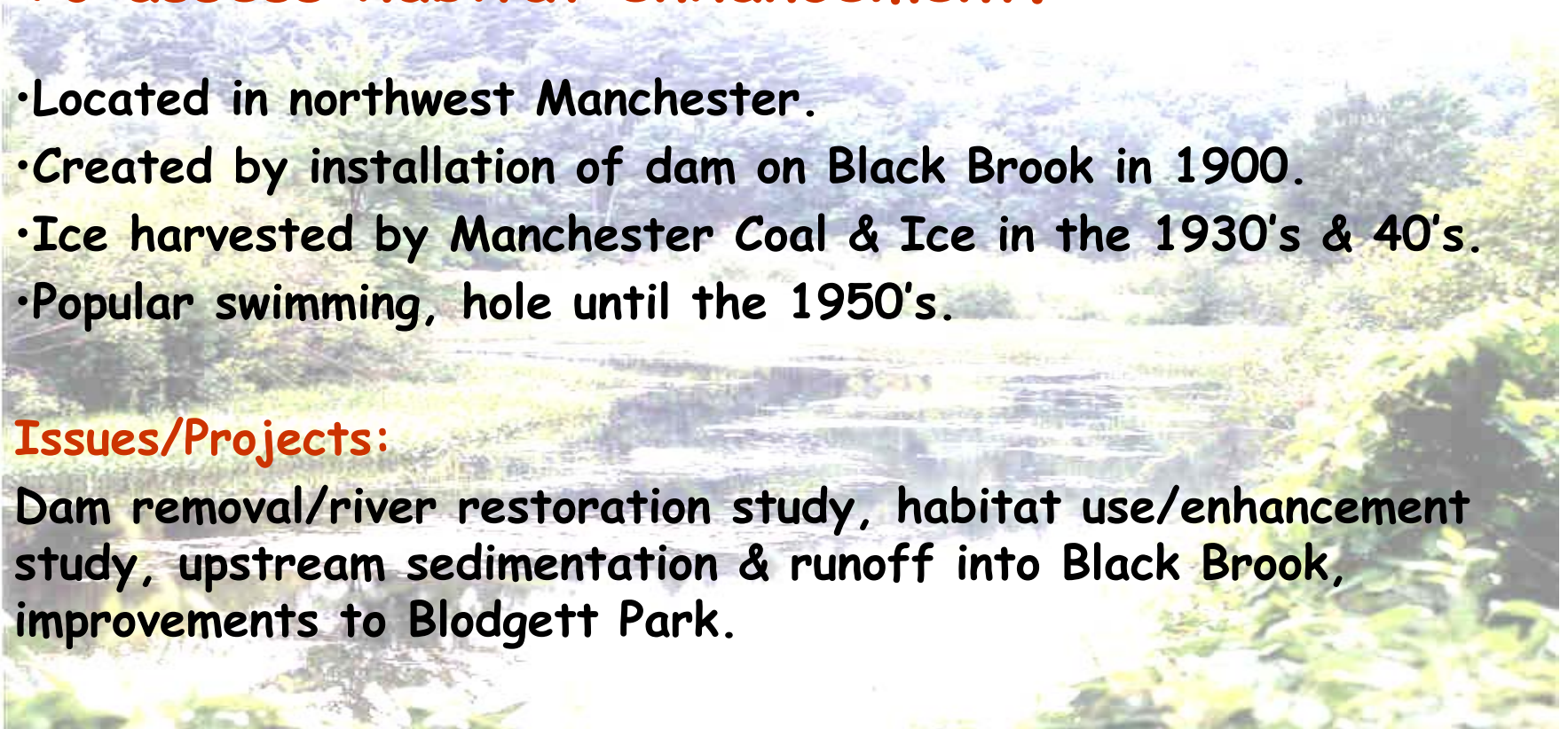
Maxwell Pond

**Goal(s): To assess feasibility of dam removal.
To assess habitat enhancement.**

- Located in northwest Manchester.
- Created by installation of dam on Black Brook in 1900.
- Ice harvested by Manchester Coal & Ice in the 1930's & 40's.
- Popular swimming, hole until the 1950's.

Issues/Projects:

Dam removal/river restoration study, habitat use/enhancement study, upstream sedimentation & runoff into Black Brook, improvements to Blodgett Park.





McQuesten Pond

McQuesten Pond



McQuesten Pond

Goal(s): To secure conservation easements/ ownership of prime wetland areas.

- 6 acres wetland in west Manchester.
- All land/water privately owned – would like to secure conservation easements.
- Valuable bird and wildlife habitat.

Issues/Projects:

Long Term: Pavement reduction and shoreland restoration in adjacent lots *Short Term:* On-site stormwater treatment systems, invasive species, dumpster & parking lot runoff, possible wetland boardwalk and kiosk at north end.

Nutts Pond



Nutts Pond



Nutts Pond

Goal(s): To improve sport fishing and non-motorized/ recreational boating opportunities. To improve water quality.

- Located in south Manchester.
- Natural waterbody - unimpounded.
- Fed by Tannery Brook.
- Ice harvested by Manchester Coal & Ice until 1920's.
- 1938 popular swimming spot. Closed to public swimming in 1968.

Issues/Projects:

Drainage study of four urban runoff outfalls, dredging near outfalls, NPS/ pollution prevention on-site assessments of area businesses, invasive species/Brazilian waterweed management, pond circuit trail/Rails-To-Trails project.



Pine Island Pond

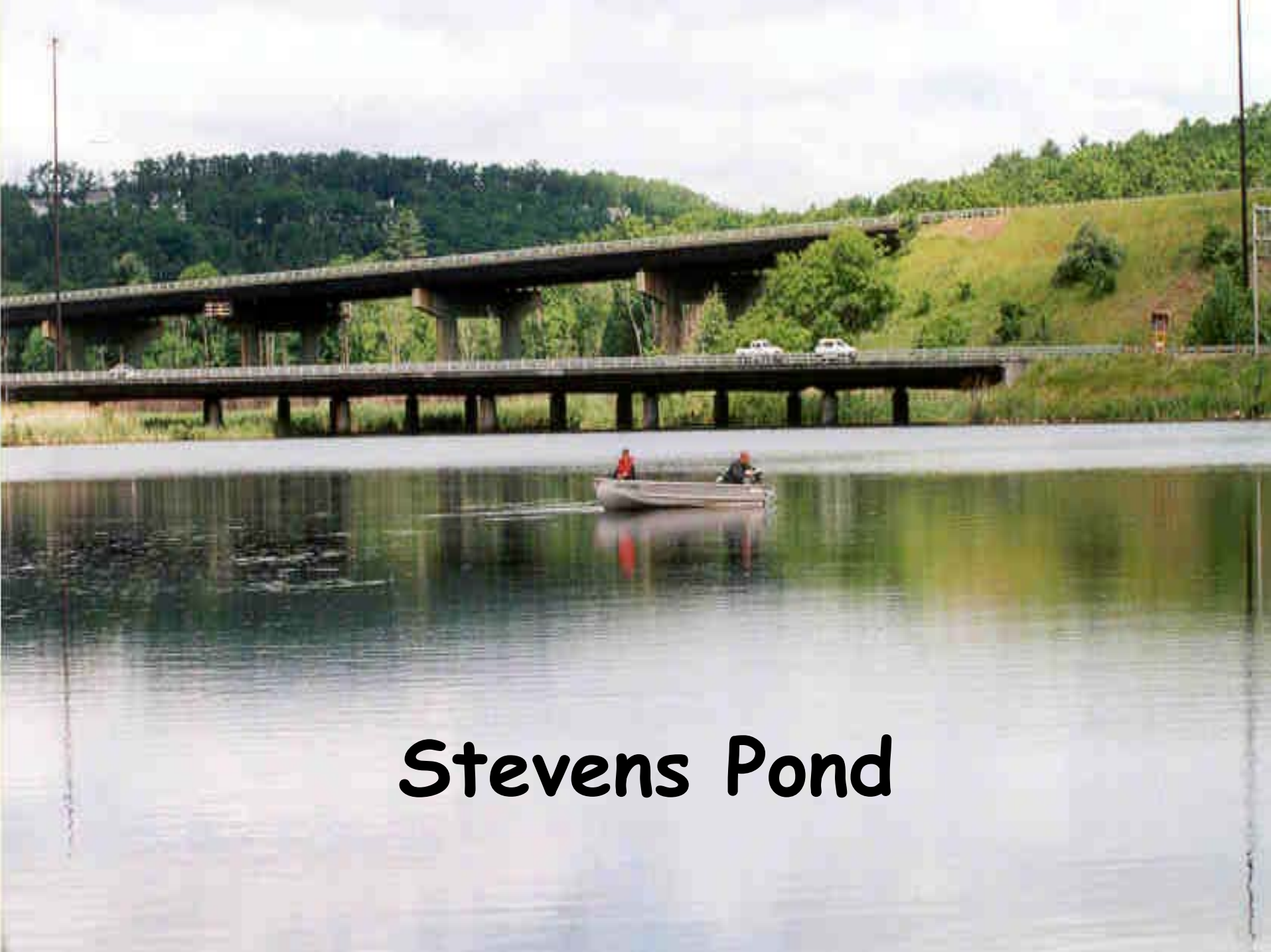
Pine Island Pond

Goal(s): To maintain fishable/swimmable water quality standards. To improve fish habitat.

- Located in south Manchester abutting airport.
- Impounded by dam on Cohas Brook. Part of large watershed including Great & Little Cohas Brook, Cohas Swamp, Lake Massabesic.
- Home to historic Pine Island Park.

Issues/Projects:

Address sedimentation at north-end inlet, implement streambank stabilization efforts at Cohas Brook, address increased plant growth, introduce fish passage at dam, develop comprehensive watershed management plan.




Stevens Pond

Stevens Pond



Stevens Pond

Goal(s): To improve water quality through a partnership with the Department of Transportation.

- 
- 16 acres in east Manchester near/under I93.
 - Fed by Cemetery Brook.
 - Large wetland area on northwest side.
 - Excellent habitat for wildlife and birds.
 - Former swimming spot. People still fish.
 - Completion of I93 in 1964 impacted water quality.

Issues/Projects:

Improve I-93 runoff, create wetland boardwalk, trail creation & improvement, secure adjacent parkland.

4)Data Collection & Analysis



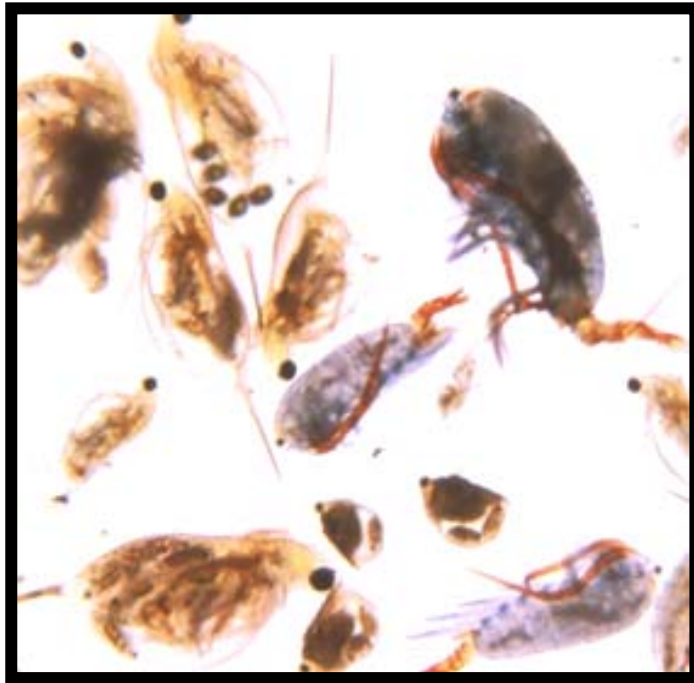
Ambient Water Quality Parameters

- Total Phosphorus
- Nitrogen
- Chlorophyll-a
- Turbidity
- Conductivity
- Dissolved Oxygen & Temperature Profile

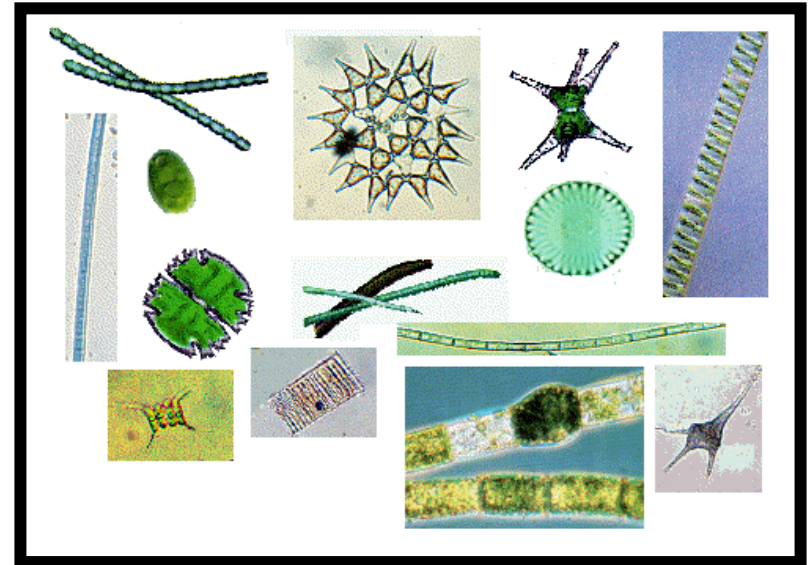


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Collection & Identification of Zooplankton & Phytoplankton



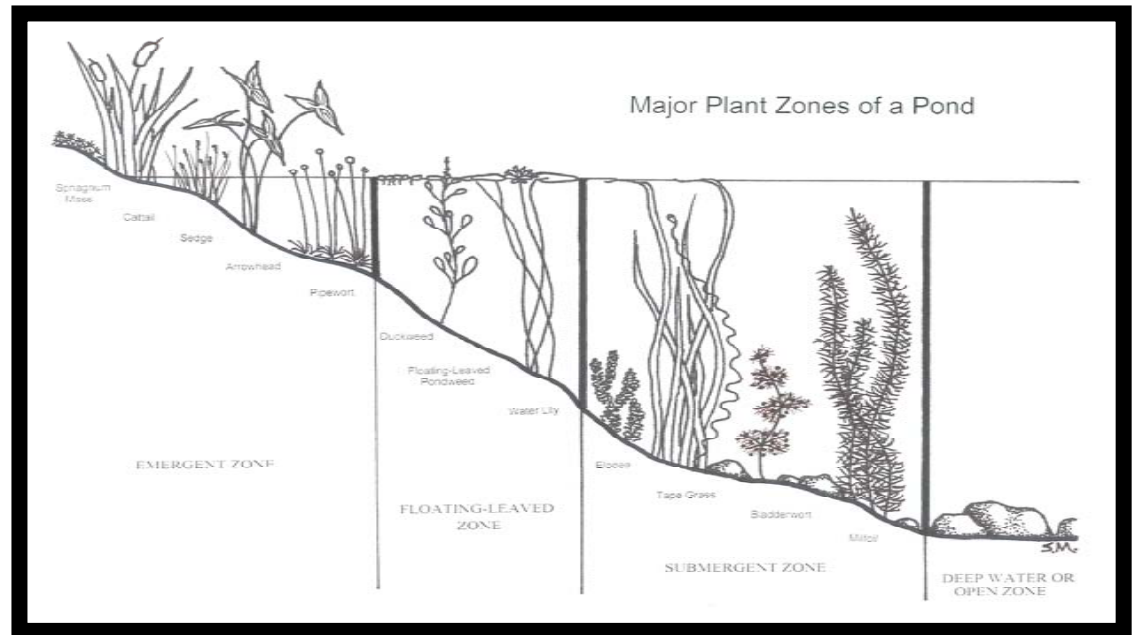
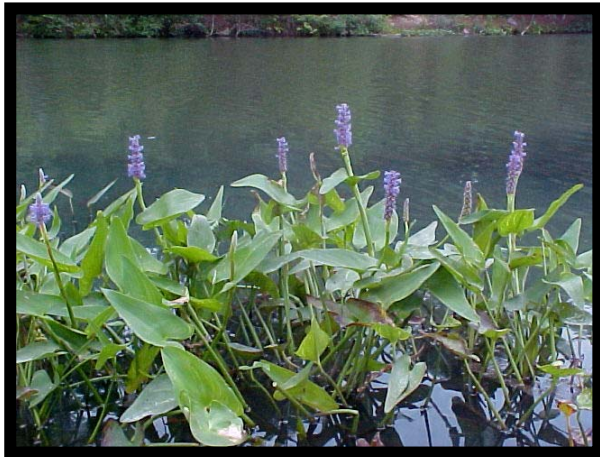
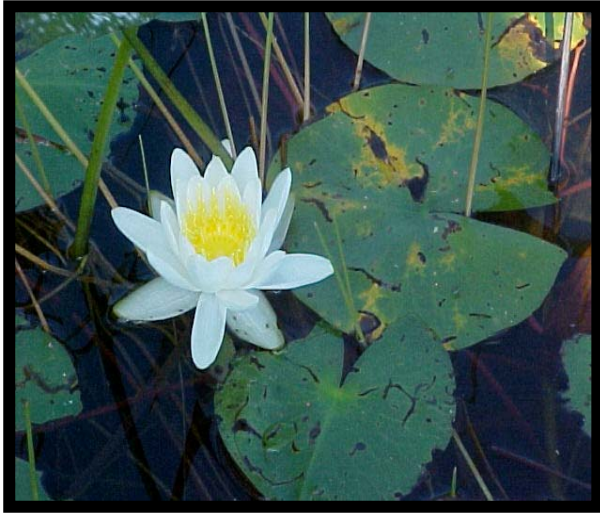
ZOOPLANKTON: Microscopic animal life that float within or on top of lake water.



PHYTOPLANKTON:

Microscopic plant life that float within or on top of lake water.

Shoreline & In-Lake Vegetation Surveys



Point & Nonpoint Source Shoreline Surveys

- Delineated and walked boundaries of watershed.
- Traced inlets for upstream issues.

The Results - Issues Associated With:

- Adjacent commerce/urbanization - very common.
- Stormwater runoff - common.

Shoreline erosion & sedimentation of water - selective.

- Excessive pavement & flash storm surges -selective.
- Direct pipe discharge - uncommon.

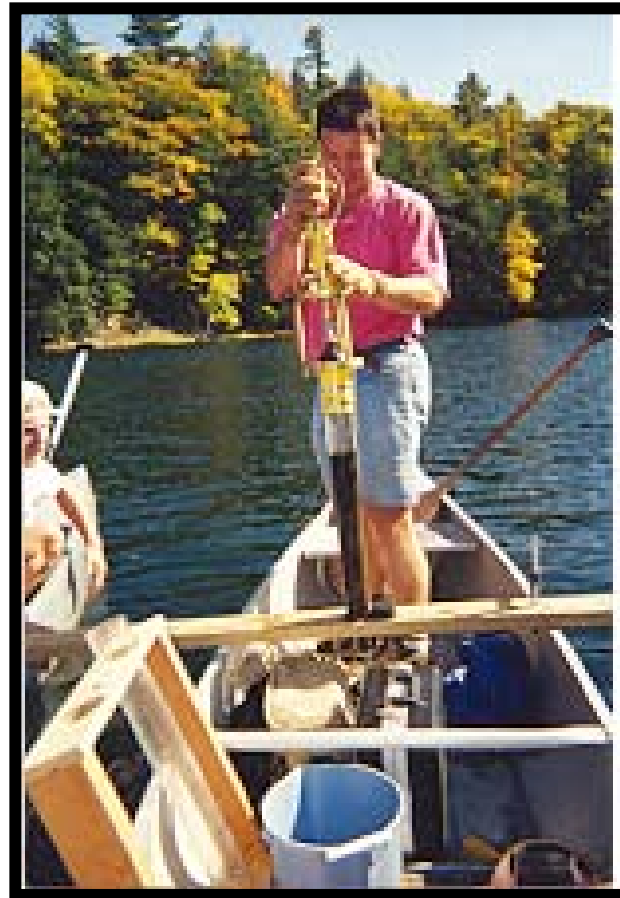


Fish Surveys & Tissue Analysis

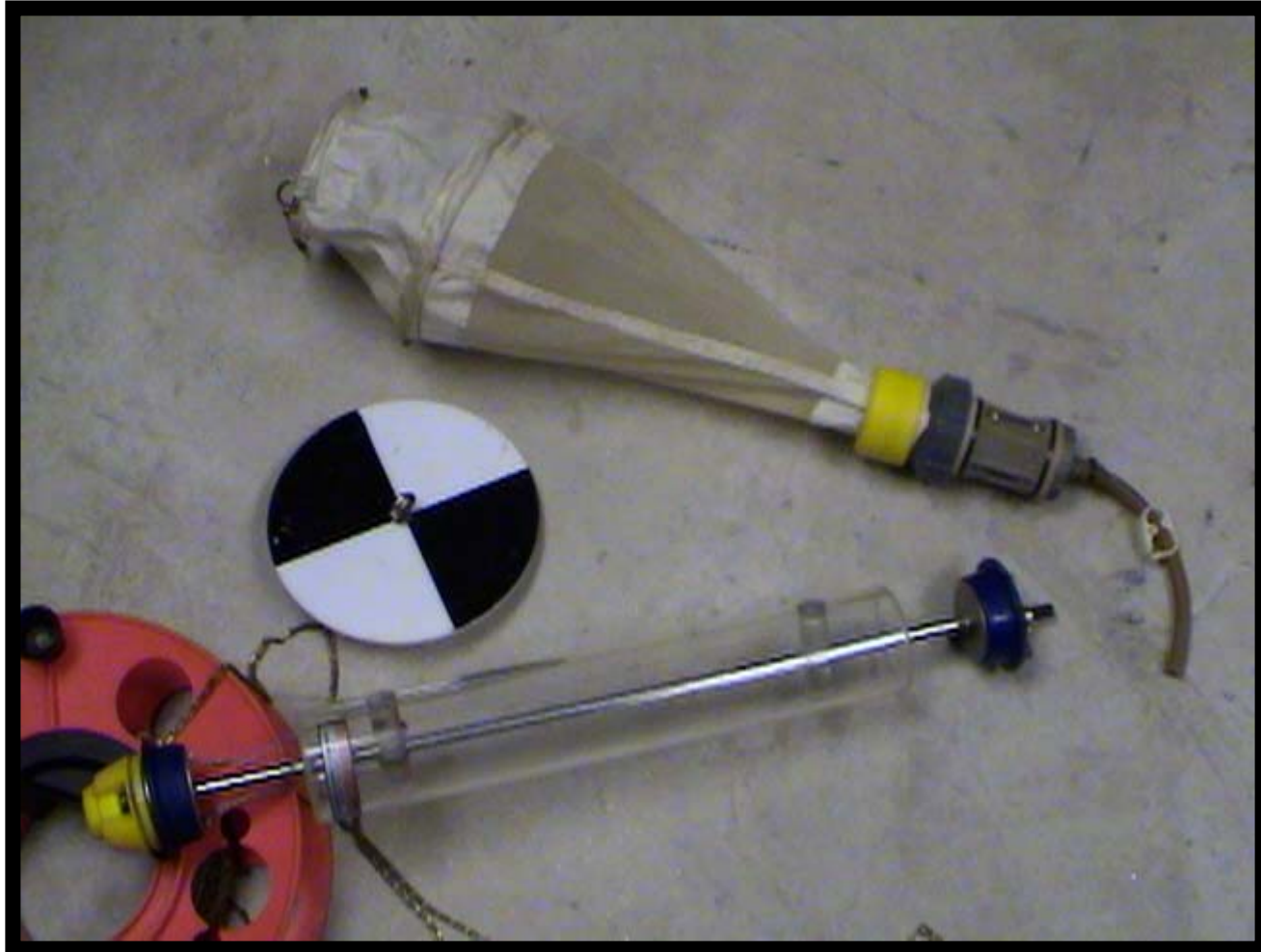
| <u>Species</u> | <u># Sampled</u> | <u>Avg. Length (mm)</u> | <u>Avg. Wt. (g)</u> |
|-------------------|------------------|-------------------------|---------------------|
| Yellow Perch | 17 | | 83 |
| Pumpkinseed | 44 | | 32 |
| Largemouth Bass | 481 | | 17 |
| Bluegill | 175 | | 4 |
| E. Chain Pickerel | 148 | | 4 |



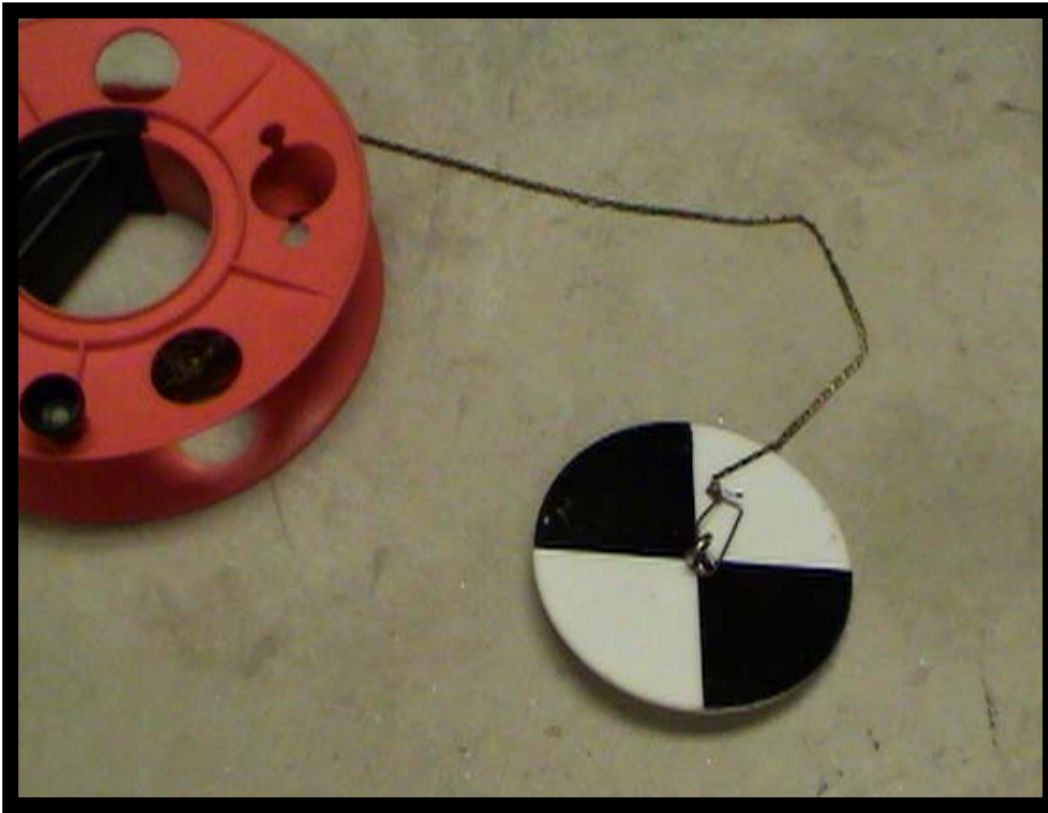
Sediment Sampling & Analysis



4) Water Quality Sampling Equipment



The Secchi Disk



Used to measure
transparency
(water clarity)



The Plankton Net

Used to collect minute or microscopic plants (phytoplankton) and animals (zooplankton)



The Temperature/"DO" Meter



Takes water temperature (C) and dissolved oxygen levels (mg/l) at several depths to give "profile"



The Kemmerer Bottle

Takes "integrated" water samples within the water column. Samples are sent to DES to be analyzed for total phosphorus, nitrogen, chlorophyll-a, turbidity, conductivity, etc...

5) Outreach & Education Endeavors



Classroom Presentations & Field Events for 8th Grade and Local College Classes



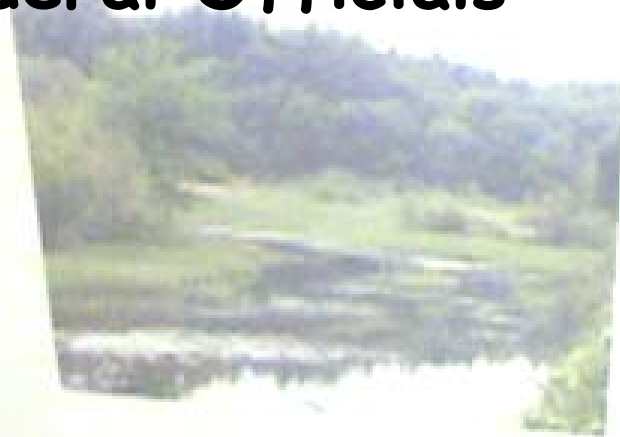
Newsletters & Newspapers

300 Copies of "Pond Possibilities" Newsletter
Produced and Distributed Annually

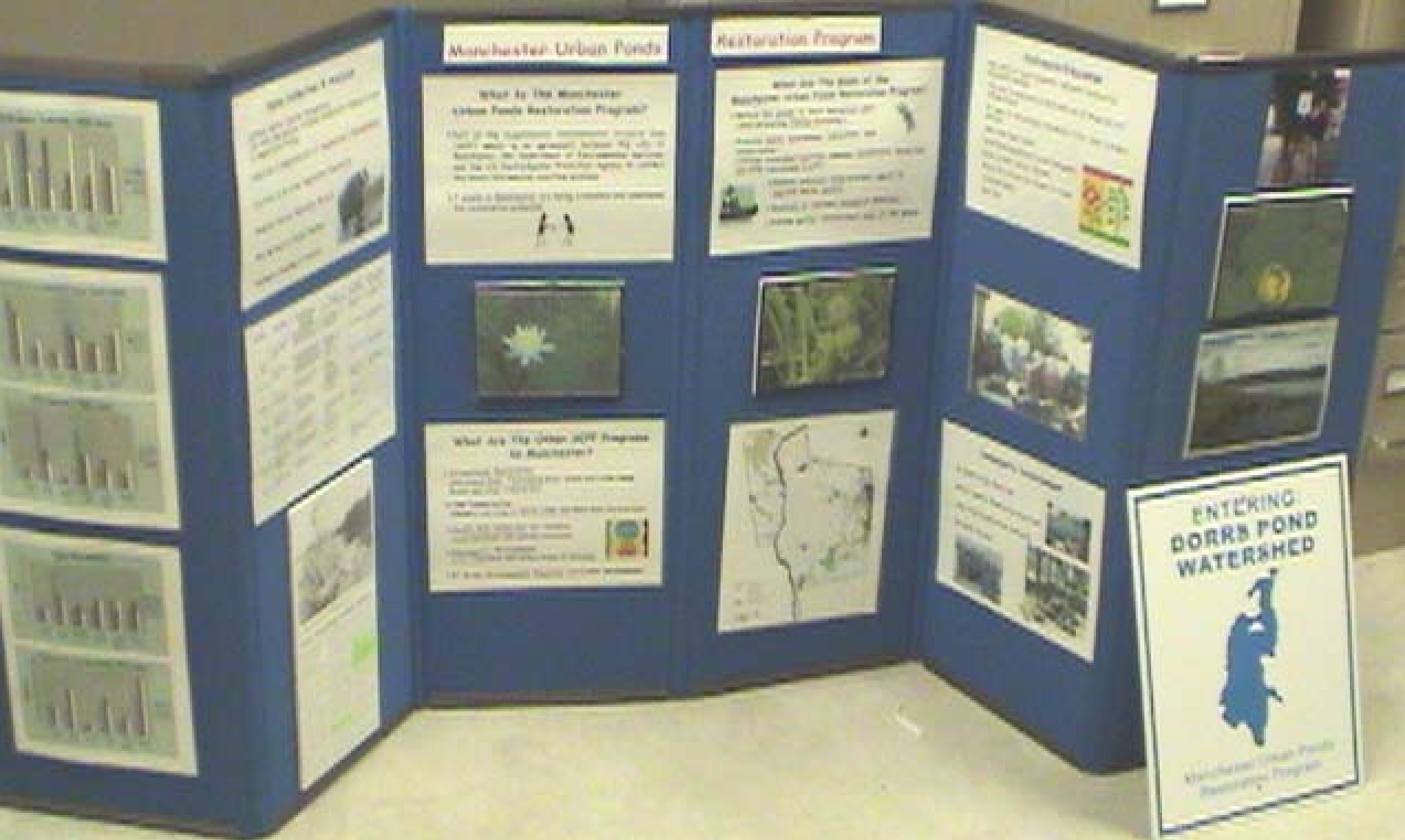
Editorials/Commentaries in Local Newspapers

Yearly Reports

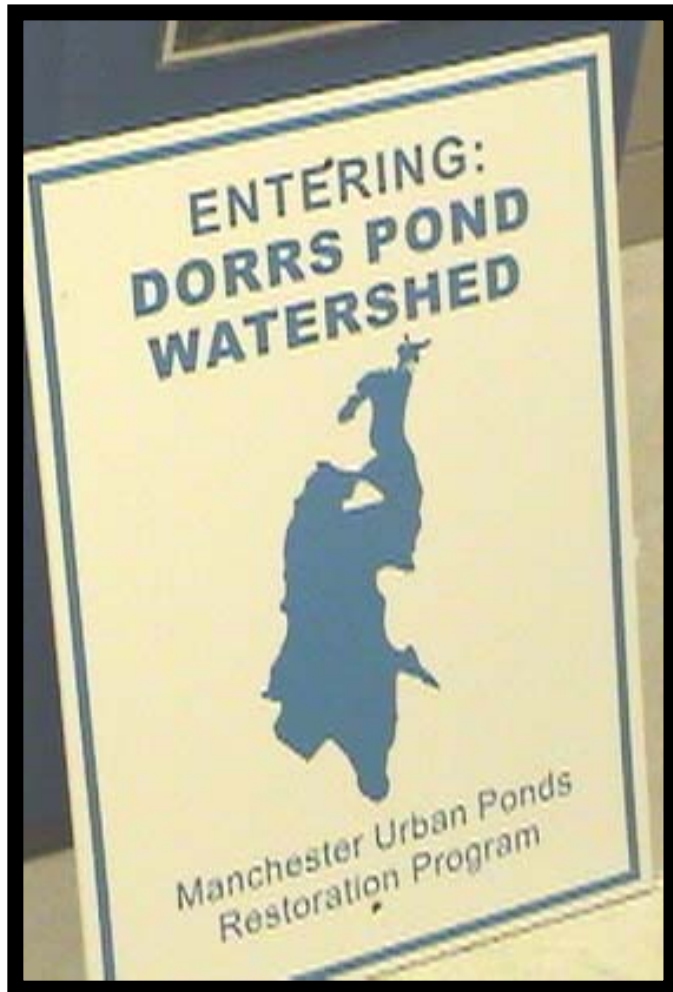
60 Copies of **Annual Report** Distributed to City,
State, & Federal Officials



Traveling Display



Watershed Signs



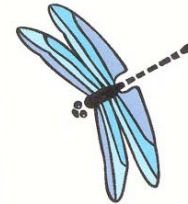
Meet Your Pond!



Do you see Manchester's urban ponds as life-less or "dead"? The truth is, they are abundant with life!

Join the Urban Ponds Restoration Coordinator and members of the conservation commission for a "Meet Your Pond" adventure!

We will walk the trails, identify native and exotic vegetation (including a carnivorous plant!), collect and identify common stream insects, look for frogs, fish, birds, and even examine tiny, microscopic plants (phytoplankton) and animals (zooplankton). We will also discuss current issues surrounding the pond, and what we can do to improve the water quality.



In addition, you can see how to sample a pond for chemical and biological parameters. Boat rides may be available. If you have them, bring your boots, binoculars, and dress accordingly!



Join Us!

All pond activities are from 9:00-12:00noon.

Saturday July 13: Doors Pond

Thursday July 18: Nutts Pond

Saturday August 3: Maxwell Pond

Saturday August 10: Stevens Pond

Thursday August 15: McQuesten Pond



WANTED! A FEW GOOD VOLUNTEERS!

Do you live near an urban waterbody in Manchester? Do you canoe or fish there? Do you hike, bike, or jog there? Do you take an interest in the plants and wildlife that surround this waterbody? Are you a backyard-botanist, insect-enthusiast, or bird-watcher at heart?

If the answer to any of these questions is “YES!” the Manchester Urban Ponds Restoration Program (UPRP) can use your help!

UPRP will be holding informational sessions to discuss an overview of the Urban Ponds Restoration Program, a history of each pond, the past year’s achievements, and future goals to preserve and protect these ponds. Several volunteer opportunities will be discussed.

Please join the program coordinator and members of the Manchester Conservation Commission to learn more about what individuals like yourself have done, and can do, to help restore the quality of our neglected ponds. **YOUR INPUT IS IMPORTANT** and can help shape a vision for the future of Manchester’s urban waterbodies!

The following dates and times have been selected as “**Informational Watershed Meetings.**” All meetings will begin at 7:00pm.



- Monday April 15 (Weston School): Stevens Pond
- Wednesday April 24 (Amoskeag Fishways): Maxwell Pond
- Wednesday May 1 (Memorial HS): Nutts Pond
- Tuesday May 14 (Parker Varney School): McQuesten Pond



In addition, the following dates have been set for “**Spring Pond Cleanup Events.**” All cleanups are scheduled from 9:00am-12:00noon. Garbage bags, gloves, and rakes will be supplied.



- Saturday April 20: Nutts Pond
- Saturday April 27: Stevens Pond
- Saturday May 4: Dorrs Pond
- Saturday May 11: Maxwell Pond
- Saturday June 1: McQuesten Pond



SECOND ANNUAL MANCHESTER EARTH AND PONDS FESTIVAL

Date: Saturday 6/22/02 **Time:** 10 AM - 3 PM
Livingston Park, D.W. Highway, Manchester

Join us for an outdoor family festival designed to raise awareness of Manchester's environment!

Highlights Include:

- Environmental exhibitors
- Kids activities
 - face painting
 - games, clowns
- Raffle prizes
- Kayak demonstrations
- Interpretive trail walks
- Live entertainment



This Event Is Sponsored By:
Manchester Urban Ponds Restoration Program
Manchester Recycling Committee
Manchester Conservation Commission



Fact-Sheets for Kiosks

- Map of waterbody/watershed.
- Water quality data.
- History of waterbody.
- Common exotic plants.
- Common fish.
- Nonpoint source pollution issues.





Web Site!

www.ci.manchester.nh.us/UrbanPonds



Community Involvement

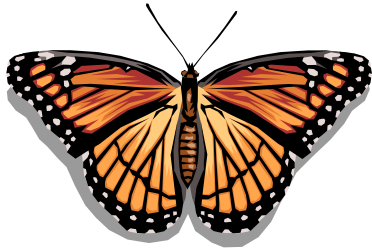
- Bi-Annual Pond Clean-ups
- Water Quality Monitoring Assistance
- Local Pond Preservation Societies
- Shoreline Surveys



Take-Home Message:

**"WORK ON YOUR
WATERSHED!"**





Thank You!

Art Grindle - Program Coordinator

Jen Drociak - Manchester Conservation Commission

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